ABSTRACT

An overlay target includes two pairs of test patterns used to measure overlay in x and y directions, respectively. Each test pattern includes upper and lower grating layers. A single pitch (periodic spacing) is used for all gratings. Within each test pattern, the upper and lower grating layers are laterally offset from each other to define an offset bias. Each pair of test patterns has offset biases that differ by the grating pitch / 4. This has the important result that the combined optical response of the test patterns is sensitive to overlay for all values of overlay. An algorithm obtains overlay and other physical properties of the two or more test patterns from their optical responses in one combined regression operation.